T LYMPHOCYTES MOTILITY TO INTERLEUKIN-1 IS SIGNIFICANTLY INCREASED IN PATIENTS WITH SARCOIDOSIS

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PURPOSE
A significant increase of lung T cells is characteristic in patients with pulmonary sarcoidosis. The origin of accumulated T cells in the lungs are considered from peripheral blood partly due to chemotactic activity of interleukin-1 (IL-1) which is released from activated macrophages. We investigated the difference of T cells mobility between sarcoidosis and healthy controls from the view point of T cells activation.

MATERIALS AND METHODS
We selected 18 healthy individuals (smokers=8, non-smokers=10) and 18 sarcoidosis cases (all non-smokers). We collected cells from bronchoalveolar lavage fluid (BALF) and suspended these cells 5 × 10⁶ /ml in MEM. We separated blood mononuclear cells from both healthy and sarcoidosis cases by gravity gradient centrifugation and further separation of T cells fraction using E rosette method. T cells were further purified by nylon wool column method and adjusted the cells at the density of 2 × 10⁶ /ml in RPMI. We examined T cells migration towards IL-1 (Ultra pure Human IL-1) using 48 well micro-chemotaxis chamber. We selected 8 μ nitrocellulose filter for this assay and checkerboard method was also used in each assay to distinguish chemokinesis from chemotaxis. Migration of T cells towards IL-1 was counted under microscope using leading front method.

RESULTS
We found that, number of migrated T cells towards IL-1 is significantly increased when compared with that without IL-1. Under the same concentration of IL-1, number of migrated T cells were significantly increased in sarcoidosis when compared with those from healthy non-smokers (figure-1). Inhibition of T cells migration was significantly detected in both sarcoidosis and healthy non-smokers when various concentration of IL-1 was placed in the upper chamber. (figure-2). No significant difference of T cells migration towards macrophage
culture supernatant was detected in a comparison of healthy non-smokers and sarcoidosis (figure-3).

DISCUSSION

From our results, the role of IL-1 as chemotactic factor could be confirmed. But we could not detect any significant difference of the number of migrated T cells between sarcoidosis and healthy controls when macrophage-culture supernatants were used as chemotactic material. On the other hand, the number of migrated T cells to IL-1 is significantly increased in patients with sarcoidosis, compared to healthy controls. Therefore, we concluded that, the mobility of T cells in patients with sarcoidosis was significantly increased by unknown intrinsic activation of T cells.

![Figure-1](image-url)

**Figure-1**

**Number of migrated T lymphocytes towards IL-1 (10^-5)**

In healthy and sarcoidosis

![Figure-2](image-url)

**Figure-2**

**Distance of migration of T cells against medium**

(healthy non-smoker)

![Figure-3](image-url)

**Figure-3**

**Number of migrated T lymphocytes against various concentration of IL-1 (HNS)**

*Optimum dose of IL-1 for T lymphocytes migration are assessed in (10^-6) and (10^-7) diluted IL-1*